Labour mobilization and architectural energetics in the North Cemetery at Ayios Vasilios, Laconia, Greece.

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Sofia Voutsaki, Youp van den Beld, Yannick de Raaff

8.1 Introduction

When discussing human investment in large-scale constructions, finding ways to measure labour input, and evaluating the impact of building projects on economic and social relations, the emphasis is inevitably on impressive fortifications, monumental temples, or urban building programmes. In our paper we would like to pay attention to more modest constructions. We believe that these more unassuming building projects have to be studied for three reasons: to start with, they may have required more work than we have hitherto assumed, as we have not always paid sufficient attention to their construction process. Secondly, studying variation in labour input may help us understand social strategies of distinction or conformity, exclusion, or inclusion. Finally, the initiation of building projects can help us understand the processes of social transformation in periods when the division of labour and the circulation of resources undergo radical change. Our main argument is that the mobilization, manipulation, and centralization of labour can be important components in the transformation of social relations and the emergence of aspiring elites and regional centres.

Our discussion is based on the Early Mycenaean (*i.e.* early Late Bronze Age; approx. 1700-1420 B.C.E.) cemetery at Ayios Vasilios, Laconia, southern Greece.

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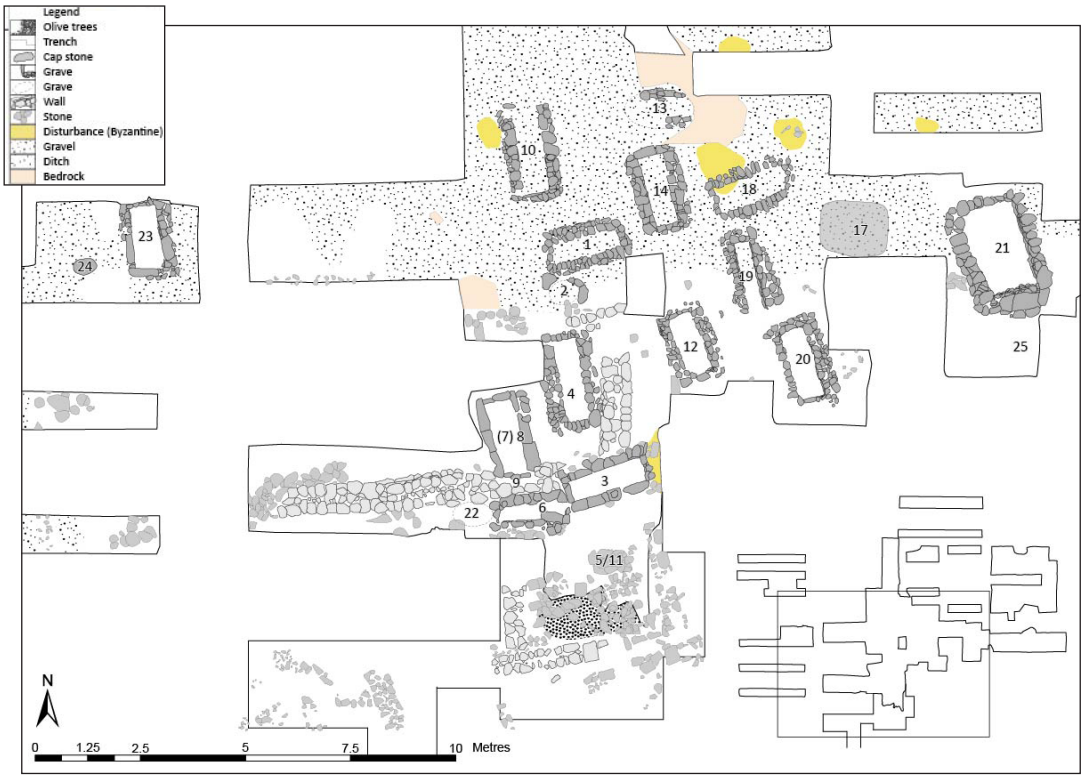

Figure 8.1: Plan of the North Cemetery (Prepared by Gary Nobles, Irene Koulogeorgiou and Erwin Bolhuis).

The North Cemetery[437] presents a very interesting case-study, because it was in use in the Early Mycenaean period, when pervasive changes can be observed, especially in the mortuary sphere. Extramural, organized cemeteries such as the North Cemetery replaced the intramural burials which were used in the Middle Bronze Age (2100-1700 B.C.E.). Larger, deeper, and more complex graves such as large cists, shaft graves, built tombs, and eventually rock-cut chamber tombs and monumental *tholos* tombs, replaced simple cists and pits; multiple burials replaced single inhumations; reuse and secondary treatment spread; and richer offerings accompanied the dead.[438] It is generally accepted that these changes are part and parcel of the transformation of the mainland societies at the onset of the Mycenaean period, *i.e.* the emergence of social elites and regional centres across the entire southern mainland.[439]

437 The Ayios Vasilios North Cemetery is being excavated as part of the Ayios Vasilios Project, which is directed by A. Vasilogamvrou, Director Emerita of the Laconia Directorate of Prehistoric and Classical Antiquities, under the auspices of the Athens Archaeological Society. The excavation of the North Cemetery is directed by Sofia Voutsaki, and is financed by the Groningen Institute of Archaeology, the Ammodo Foundation, the Mediterranean Archaeology Trust and the Institute of Aegean Prehistory.
On the North Cemetery: Voutsaki *et al.* in press a; Voutsaki *et al.* in press b; Voutsaki *et al.* in press c.

438 On mortuary practices in this period see Cavanagh and Mee 1998, 23-60.

439 For syntheses on this period see Wright 1998; Voutsaki 2010.

Ayios Vasilios is one of these newly emerging centres. The site is located on a low hill, at a distance of about 12 km south of modern Sparta. Systematic excavations carried out since 2009 have revealed spectacular findings such as monumental architecture, rich finds, and Linear B tablets,[440] which leave no doubt that the site can be identified as the palatial centre of Mycenaean Laconia at least during the later Mycenaean period (approx. 1400-1270 B.C.E.). It is very difficult at this moment to understand how and why Ayios Vasilios rose in significance, since the early Mycenaean layers have hardly been reached in the excavations so far. Luckily the North Cemetery can give us insights into the early formative stages, as the graves are in use from the end of the Middle Bronze Age to the period when the palatial complex was constructed, and, therefore, allow us to observe changing social relations during this crucial period.[441]

The North Cemetery is located at the northern edge of the hill, at a distance of c. 50 m from the palatial complex. Twenty-two graves and two burials (bones assembled on top of a grave) have been excavated (Figure 8.1). Most graves are built cists, though a few simple pits, which were used most often for small babies and children, have also been found, as well as one large built tomb, tomb 21. As we will see later, the cist tombs are relatively large, carefully built and covered by heavy slabs. Most graves contain multiple burials, and many contain a combination of primary inhumations and 'secondary' burials, *e.g.* scattered, heaped, and sometimes selectively removed and/or reburied remains of earlier burials. Therefore, the North Cemetery follows all the new customs which will become the norm in the Mycenaean period, but with one exception: the graves are often unfurnished or poor. This is in contrast to most cemeteries in the southern mainland where, by that period, more burials are accompanied by a vase, a simple ornament or a tool, and even more so to elite precincts, such as the contemporary shaft graves at Mycenae, in which enormous amounts of valuable and exotic finds were deposited with the dead. While differences in wealth are minimal, the North Cemetery graves show some interesting variation in size and quality of construction.[442]

We (aim to) demonstrate below that the new tomb types used in the North Cemetery (large cists, built tomb) required substantial labour input for the quarrying, transporting and rough working of the stones. Usually this kind of considerations are made for the truly monumental *tholos* tombs[443] whose much larger size and corbelled construction required not only substantial labour investment, but also advanced engineering skills.[444] Needless to say, the construction of the cist and built tombs was less demanding than that of *tholos* tombs. However, these first building projects enabled

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440 On the palatial complex in Ayios Vasilios, see Vasilogamvrou 2010; Vasilogamvrou 2011; Vasilogamvrou 2012; Vasilogamvrou 2013.

441 The palatial complex must have been built around 1450 B.C.E.; see Vasilogamvrou *et al.* in press, while the North Cemetery must have been in use from c. 1700 to 1400 B.C.E. The chronology is still tentative as the finds are still being processed.

442 We will not address the discrepancy between the careful construction and the absence, or poverty of offerings here. On this point, see Voutsaki *et al.* in press a; Voutsaki *et al.* in press b; Voutsaki *et al.* in press c.

443 The first *tholos* tombs are built in a period more or less contemporary with the foundation of the North Cemetery, i.e. around 1700 B.C.E. However, the first *tholos* to be built in the area of Laconia, the one in nearby Vapheio, is built slightly later, i.e. while the North Cemetery is in use. See Wright 1987, 173-175; Wright 2010, 246.

444 Cavanagh and Mee 1999.

the people in the early Mycenaean period to acquire technical knowledge and to experiment with methods of quarrying, transportation and construction which must have proved indispensable in the construction of the more monumental *tholos* tombs.

Our aim in this paper is to reconstruct the labour input invested in the North Cemetery tombs, to detect variation among them, and to attempt to reconstruct social strategies in this period of shifting social relations. Our research questions shape (and are shaped by) our theoretical and methodological approach. We do not want to reconstruct labour investment in order to calculate energy expenditure as such, but in order to understand variation between tombs. As a result, we are mainly interested in relative rather than absolute measures of labour input – a point which will be developed more in the methodological discussions below. It is not uncommon for studies on labour cost to establish relative measurements or ranges.[445] However, our choice is dictated also by our material, which does not consist of one large construction project (*e.g.* a fortification wall), but of tombs which can be treated as single and separate analytical units and can be compared with each other in terms of size and quality of construction.

Our emphasis on relative rather than absolute labour measures arises also from theoretical considerations – specifically the question whether our economic concept of labour can be projected on prehistoric societies. This takes us back to complex theoretical discussions starting with Baudrillard's critique[446] of Marx's notions of labour and value. As Baudrillard pointed out, in the free market economy labour is the measure of cost, because labour is a commodity. However, this is not the case in pre-monetary, kin-based societies, where there is no all-pervasive measure of value, and where labour is not a commodity, but may also be exchanged reciprocally along kin lines. This critique may be irrelevant when one discusses the construction of aqueducts in the Roman world, but needs to be taken into account in the case we are studying: the southern Greek mainland in the transition to the Late Bronze Age where we have no evidence for institutionalized social asymmetries.

The interpretation of labour investment has a long history also in archaeology, notably in mortuary studies. The principle of energy expenditure[447] was introduced in the heyday of the New Archaeology and assumed a central position in mortuary studies. Energy expenditure in graves, presented as an objective and universal measure, was thought to reflect status and social complexity. The reaction against reflective reasoning was the starting point of the post-processual critique[448] which emphasized that the elaboration of the mortuary sphere – whether by means of impressive monuments, complex ritual, or rich offerings – should be seen as a social strategy of display and self-representation. In this approach, the investment of labour is seen as a social practice, rooted in specific social and cultural conditions. As a result, labour should not only be measured in order to calculate energy expenditure on the basis of some abstract and universal criteria but examined within its physical and social context.

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445 See for example Turner, this volume. D. Turner also suggested that the following were closest to suggesting ranges in energetics studies: ECAFE 1957; Erasmus 1965; Milner *et al.* 2010.

446 Baudrillard 1975; Baudrillard 1981. These arguments are more extensively presented in Voutsaki 1997. Baudrillard's critique has inspired studies such as Appadurai's (1986) *Social Life of Things* volume which had a seminal influence on archaeology.

447 As formulated by Saxe 1970; Tainter 1978.

448 Hodder 1982; Parker Pearson 1982.

Seeing labour as a social practice implies that we should not only measure labour input, but also attempt to understand the purposes it is used for, and the *forms* it takes. For instance, it is not sufficient to measure the labour gone into the construction of a tomb; we also need to examine which aspects of the tomb design and construction vary, which parts of the tomb are elaborated upon (the façade? the entrance? the interior? etc.), and how this is achieved.

Finally, seeing labour as a social practice implies that construction processes are seen as establishing a social relation between people – indeed, buildings are made *by* someone *for* someone else. For this reason, we need to study how labour is exchanged and controlled – for example, whether it is exchanged reciprocally, within the nexus of kin relations, or as part of asymmetric relations between social groups, or between a centre and its hinterland.[449] We therefore need to reconstruct not only the forms labour takes, but also its *flow* in social life.

To summarize our approach and research questions, in this paper we address three different questions:

- A theoretical question: how to *interpret* labour investment?
- A methodological question: how to *measure* and *compare* labour investment?
- A historical question: how to *explain* labour mobilization in processes of social change, and specifically in the transformation of relatively simple kin-based societies to differentiated and centralized formations?

The emphasis in this paper is on the methodological discussion, as the theoretical argument, the shift from reciprocal to asymmetric relations, has been presented elsewhere.[450] Our discussion starts with a critical discussion of the methods of architectural energetics which is followed by the presentation of our own methodology, concluding with the analysis of the North Cemetery graves.

8.2 Architectural energetics: a critique

Architectural energetics is a method which translates constructions into labour cost estimates by investigating the entire construction process and its distinct parts. The labour costs of construction stages serve as the analytical unit of measurement upon which comparative assessments can be made. Central to architectural energetics is the assumption that labour investment can be measured and quantified into absolute values measured in a labour-time unit, *e.g.* man-hours or man-days.[451]

This method forces researchers to exhaustively reflect on the construction process, and to outline all the different tasks and stages. Additionally, it requires them to be explicit about their assumptions and calculations. The proponents of the method are quick to point out that these absolute figures are – as any reconstruction of past activities – an approximation. According to Abrams and Bolland this is not a problem, as

449 Several such aspects have been discussed in some detail, also in the Mycenaean context. See Santillo-Frizell 1997-1998; Maran 2006a; Maran 2006b; Maran 2016; Brysbaert 2013; Brysbaert 2015a; Brysbaert 2015b.

450 Voutsaki 2016.

451 For a complete explanation of the method see Abrams and Bolland 1999.

the analysis of the building process itself contains certain degrees of freedom that are determined by the researchers themselves. [452] While we agree that all reconstructions are approximations, we still need to assess whether these approximations are plausible. Therefore, in this section we would like to discuss some problems arising when estimating labour investment in labour-time units.

The first difficulty is that the seemingly abstract and universal measures used for the calculations are often based on subjective choices.[453] To start with, the definition of the workforce – in terms of age and sex – can be heavily influenced by the social and cultural background of the researchers themselves. The same can be said about the calculation of working hours per day. The figure of 220 working days per year with a 10-hour workday[454] is often employed to average out seasonal differences,[455] though this does not fully account for differences between periods, regions and socio-cultural contexts. At a deeper level, the organization of the work force is taken into account by means of these abstract calculations or averaged figures, but with little attention to the specific social conditions – for instance, all calculations would be affected if kinsmen or slaves rather than free workers are employed. This entails the risk of a circular argument whereby the social relations of production are assumed and fed into our calculations and interpretations.

In addition, such subjective choices are made at different, if not at every stage of the investigation. Brysbaert's attempt to calculate the labour costs (termed man-days, abbreviated md) for the quarrying of 1 m^3 of stone, used to build the Cyclopean fortification walls of the Mycenaean citadel in Tiryns, reveals great discrepancies between studies.[456] She consulted several sources: Bessac estimated that 1 md/m^3 was required to quarry unworked limestone; De Haan suggests 1.1 md/m^3, based on modern experiments with very experienced workers; Abrams calculates between 1.1 and 2.2 md/m^3 for unworked small stones, again based on modern experiments; and Pakkanen proposed similar figures, *i.e.* between 1.1 and 2.2 md/m^3, for Athenian limestone masonry blocks.[457] Brysbaert concluded that a ratio of 1 md/m^3 would be a plausible estimate for the stones quarried around Tiryns, as they were (mostly) unworked.[458] This ratio is, however, the lowest of all; in fact, it is more than twice as low as the maximum effort estimated by two of the four studies, which also concern (mostly) unworked blocks. This calculation is followed by an estimate of the total volume of the walls.[459] Brysbaert decides that it is not possible to differentiate between stones of medium (0.2-0.8 m^3, 500 kg – 2 tonnes) or large (0.8-5+ m^3, 2-13 tonnes) size for their transport costing, as it is not known how many large blocks left the quarry.[460] How reliable are these calculations in the light of so many uncertainties?

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452 Abrams and Bolland 1999, 267.
453 *Op. cit.* 264.
454 Derived from DeLaine 1997, 105-106.
455 Brysbaert 2015b, 60, 71, 81 and 99, points out how different seasons will affect work progress.
456 *Op. cit.* 94.
457 Bessac 2007, 136; De Haan 2009, 3; Abrams 1994; Pakkanen 2013.
458 Brysbaert 2015b, 94.
459 *Contra* Loader 1998, 67, who thinks this is impossible to calculate.
460 Brysbaert 2015b, 94. Indeed it should be stressed that Brysbaert's study is the first to take the high costs of transportation into account.

Uncertainty can also be caused by missing information. For instance, when Brysbaert calculates the labour necessary for the transportation of stones from the quarries to the construction site at Tiryns, she notes that moving heavy stones as much as 50 m poses considerable logistical and practical challenges.[461] However, the location of only half of the quarries used at the time is known,[462] in which case the calculation of the transport costs become even more uncertain. Similarly, any decorations on architectural units can be excluded from analyses because of varying preservation conditions, resulting in incomplete comparisons of labour investment.[463]

In addition, other tasks are recognized but not taken into account because they are deemed 'beyond the scope of this paper'. While restrictions of time, space and money need to be acknowledged, sometimes glaring omissions are made. For example, many studies focus only on the construction process, but omit the preparation of the construction site.[464]

Non-recoverable activities compound the problem further. Homsher emphasizes the dependence of construction projects on the community at large, for instance, for the provision of food, tools or work animals.[465] Large-scale urban architectural projects demand so many resources that possibly every individual in the catchment area of the building site can be said to have been involved in the construction project.[466] By only measuring the construction processes architectural energetics only reveals the tip of the iceberg, *i.e.* of the collective labour investment.[467]

A final point: many studies opt to calculate the minimum effort. This has certain advantages, as comparisons between studies are more reliable and researcher's biases can be controlled. Also, it may seem that the estimates are 'safer', especially with regard to a lack of data due to incomplete remains. On the other hand, the risk exists that anachronistic concerns such as maximizing efficiency or minimizing effort considerations, will (consciously or unconsciously) affect the calculations. At times the workers (or at least the person(s) responsible) also decided to invest huge amounts of energy in monumental architectural projects which by far exceeded any functional needs. The Cyclopean fortification at Tiryns provides the obvious example of a labour investment which defies any modern economic considerations: firstly, many different types of stone were used, often specifically chosen for their colour; secondly, large conglomerate blocks were brought from a distance of 15-18 km away from the citadel.[468] Therefore, in this case, calculating the minimum effort can be said to contradict the very purpose of the construction of the Cyclopean wall, which is to convey the power that the palatial elite had over the work force and the community at large.[469]

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461 *Op. cit.* 95.
462 Brysbaert 2015a.
463 Devolder 2015, 244.
464 See for example Fitzsimons 2014, footnote 46, referring to Erickson 2010 who omits the preparations of the construction sites from research into labour costs. These lower costs are hereafter used by Fitzsimons, which in our mind compounds the problem. In contrast, see Brysbaert 2015b, 91, who points out that these costs will be taken into account in further research.
465 Homsher 2012, 22.
466 *Loc. cit.*
467 See Brysbaert 2013 for an extensive discussion of non-recoverable activities.
468 Brysbaert 2015a; Brysbaert 2015b.
469 Brysbaert 2015b, 102.

Let us summarize our discussion on architectural energetics. Clearly the method addresses an important problem: it confronts and explicitly discusses the complexity of construction projects, and thereby forces us to reflect on the entire construction project, all its stages and even the smallest details. Even so, some drawbacks have been noted: the quantification of labour investment into absolute labour-time units, *e.g.* man-days, may appear as an objective and transparent methodology which enables and invites comparison. It often, however, rests on subjective choices, tacit assumptions and unexamined projections, the accumulation of which put into doubt the usefulness of the method. The important problem with architectural energetics is that it *appears* as one method, while in reality every researcher decides for themselves which figures to choose, or which construction stages to take into account – thereby *creating their own methodology* and making comparisons unreliable, or even impossible.

8.3 A new methodology: relative assessment of labour input

The challenge we now face is to find a solution between the two opposed requirements: on the one hand, the very legitimate need to assess, quantify, and measure labour investment, and, on the other hand, the need to understand labour (its form, its flow – see the theoretical discussion above) in its physical and social context. Or, to put it differently, we need to develop a methodology that is both sensitive to local social conditions *and* can be used in other contexts.

We propose not to translate labour investment to absolute labour-time figures such as man-days or man-hours. We suggest instead to assign relative values to our smallest analytical unit, *i.e.* each tomb, by trying to assess all aspects that show significant variation.

We have already noted that the North Cemetery is characterized by some variation among tombs in terms of type, size, and quality of construction. Since there is a clear differentiation between small pits which contain in most cases babies or small children,[470] in this paper we will include only cists and the built tomb.[471]

In our analysis we have taken the following construction elements into account: the *size* of the graves, the *construction quality*, and what we call the *stone value*.

i. The *size* of the grave – *i.e.* the volume of soil removed when digging the pit – was measured in cubic meters on the basis of length, width, and depth of the grave pit. In another study of contemporary tombs, size was used as the sole variable, as it was seen as a direct and reliable reflection of the amount of energy invested in its construction.[472] We disagree on this point; we believe that the act of digging the grave is not the most significant task when compared to the construction of the tomb. Our argument is based on observations on the North Cemetery tombs

470 Age differentiation characterizes the mortuary practices in the transitional period: adults predominate in the extramural cemeteries, while neonates, infants and small children are still buried *intra muros* (Voutsaki 2005; Pomadère 2010).

471 Because of restrictions of space, we do not include all tombs, but only examples from all representative categories. This does not affect our primarily methodological argument, as in this paper we do not carry out any statistical analyses.

472 Fitzsimons 2011, 78.

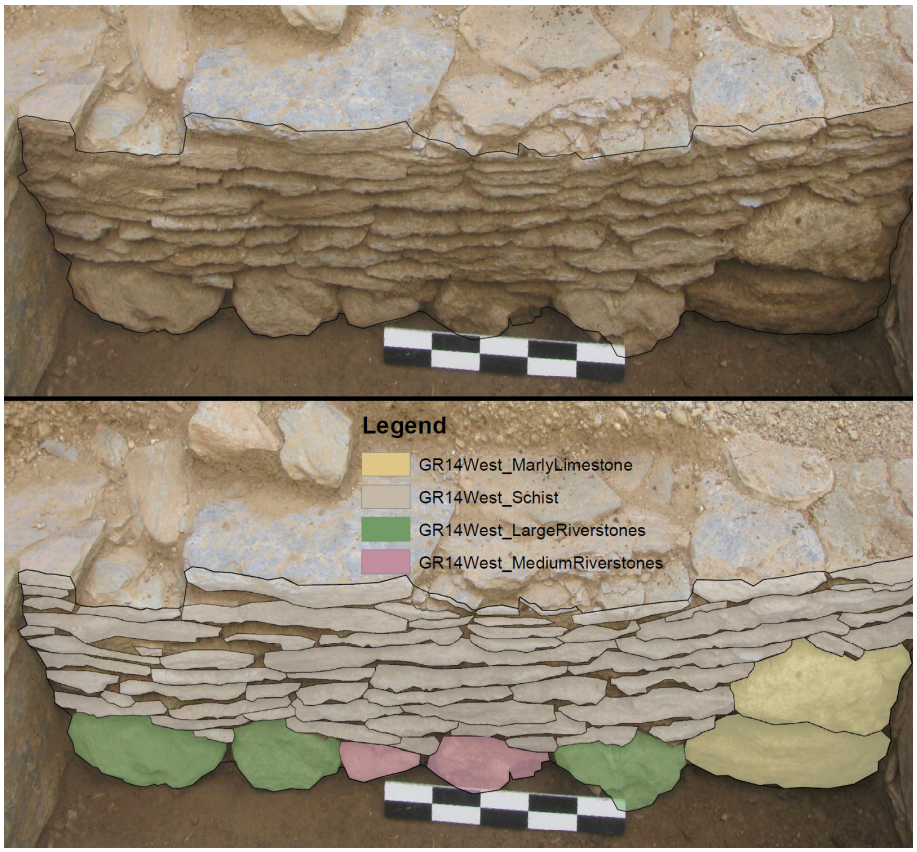

Figure 8.2: The stones digitized per different stone type in ArcGIS. The west wall of tomb 14 before (upper) and after (lower) digitization.

where we see unexpected variation in the quality of construction and in the labour involved in the acquisition or extraction and transport of the stones used. This is why we use two additional criteria.

ii. By *quality of construction* we measure how neatly the walls of the tomb are built and how well the stones fit together. To assess the quality of construction we digitized the photos of the inner sides of the tomb walls in a geographical information system (GIS), and thereby obtained outlines of the wall and of each individual stone (Figure 8.2). We then calculate how much of the wall's surface is covered by stone and how many gaps (now, of course, filled with soil) still exist.[473] By subtracting the surface area of all the stones from the surface area of the entire wall we could express the quality of construction as a percentage. This was done for all four tomb walls, and the average was used as the indicator for the quality of construction for the specific tomb.

473 It is not possible to say if the walls were built as dry walls, or if the local soil was used to make the walls more solid. We certainly have no evidence that soil was brought to the site for this purpose; at the most, the local soil may have been used. This aspect was not used in our method.

stone value = volume of stone × extraction value × transport value

Figure 8.3: The formula used to calculate the stone value.

iii. The third criterion, the *stone value,* is a composite measure, which takes into account the acquisition of raw materials and their transport to the building site. Despite the relatively unassuming size (with the exception of the built tomb 21) and the simple construction of most tombs, a surprising variety of stone types were used in the North Cemetery (Table 8.1).[474] We should stress that our observations are based on a report on the building materials used in Ayios Vasilios produced by Polymenakos, the geologist-geophysicist attached to the project.[475] These various stones have different physical characteristics and according to Polymenakos originate from different locations. To our surprise, some of these stones had to be quarried and transported across a long distance – from 4 to 8 km away. In our methodology, therefore, the stone value consists of the sum of the calculated volume of each particular type of stone in a specific tomb, multiplied by the extraction and transport values for each specific stone type (Figure 8.3).

We used the following method to determine the *volume of stone* used in the tomb: we first calculated the volume of the walls by comparing the outer dimensions of the grave wall, *i.e.* the contour of the grave pit, and its inner dimensions. We paid close attention to how the four walls joined in order to accurately reconstruct the volume of individual walls and avoid miscalculating the corners. Subsequently, we multiplied the percentage of stone coverage (the calculated quality of construction) with the volume of the wall to estimate the total volume of stone in each wall. To be able to reconstruct the stone value of a single wall, the assumption was made that the stones visible from the inner side of the wall resemble the stones behind them, which are usually not visible.[476] All stones were digitized per stone type; in this way, we could calculate the proportions in which different stone types occur in each wall, and eventually in the entire tomb. These calculations were expressed in cubic meters for each stone type (Table 8.1).

All tombs[477] were covered with phyllite cover slabs (with the exception of tomb 21). The dimensions of the individual slabs were not measured during excavation. Therefore, to estimate the volume of the phyllite cover slabs, an overall thickness of 10 cm was assumed and the length and width were calculated on the basis of the outer dimensions of the tomb walls, upon which the slabs were laid.

The *extraction value* given to each stone type is primarily based on how the stones were obtained, *i.e.* picked up or extracted/quarried, and whether additional cutting or working was necessary at the tomb site. Values ranging from 1 (picking up loose

474 See also the built chamber tomb 73 in Mitrou which is built with sandstone not used anywhere else on the site; Van de Moortel 2016, 101.

475 Polymenakos n.d.

476 This assumption was confirmed in a few partly destroyed cist tombs where the stones in the outer layer of the wall were visible.

477 A couple of tombs which had no cover slabs were found very close below the surface; we assume that their slabs were removed by ploughing.

Stone type	Characteristics	Extraction	Transport
Small-/medium-sized river stones	This category comprises a variety of stone types, *i.e.* crystalline limestone, marble, quartzite and chert, which can be found in the riverbed at the foot of the Ayios Vasilios hill, at a distance of c. 200 m.* These stones could easily be picked up.	1	2
Large-sized river stones	This category comprises the same variety of stones as the previous one, though larger than c. 30 cm in one dimension. According to Polymenakos, the larger river stones probably originate from the stream bed in the Rassina creek some 2-4 km to the east of Ayios Vasilios,* but we have observed larger blocks near the Ayios Vasilios hill. Either way, the larger stones were more difficult to lift and place in location.	2	3
Conglomerate	Grey to black colour; both fine-grained and coarse-grained varieties occur on the Ayios Vasilios hill.* It was fairly easy to quarry, which was done locally at the surface from rocky outcrops in the area of the North Cemetery and in other locations on the AV hill.*	3	1
Marly limestone	Pale beige to whitish colour; it occurs locally on the Ayios Vasilios hill. It is a soft stone that was easy to quarry. It could be extracted from rocky outcrops in the same way as conglomerate.*	3	1
Schist	Grey, greenish, with sometimes a reddish hue or even a striking light blue colour. Schist is found in the slopes of the Taygetos mountain range at about 4 km east of the Ayios Vasilios hill.* A layered rock type that is fairly easy to quarry because it breaks off into flat slabs. However, it required additional cutting to neatly fit the tomb walls.	4	4
Phyllite	A grey/beige coloured rock type which was exclusively used for the cover slabs of the cist graves. It was most likely quarried in the Fteroti gorge in the Taygetos mountain range at a distance more than 4 km away from Ayios Vasilios (exact quarrying location unknown).* Phyllite slabs are larger, thicker, and heavier than schist slabs.	5	5

*Table 8.1: The stone types used in the construction of the tombs and their corresponding extraction and transport values (*Polymenakos n.d., 3-4).*

stones) to 5 (more difficult quarrying, harder stone, necessitating additional shaping, cutting, or working) are given to the different stone types (Table 8.1).

A different *transportation value* is given depending on the distance from the nearest source to the Ayios Vasilios hill.[478] We assume that the further away the source, the more effort has to be put into the transport of the stones to Ayios Vasilios. We distinguish five zones of stone provenance, corresponding to values ranging from 1 (locally quarried at the Ayios Vasilios hill) to 5 (the higher slopes of the Taygetos mountains; Table 8.1).

We should clarify that our scoring system is schematic and relative rather than absolute. We do not imply, for instance, that a stone which receives an extraction value of 5 is five times more difficult to extract than one which has a value of 1. We emphasize again that we are interested in variation and in relative rather than absolute measures which we can use to compare tombs and study variation. Perhaps the multiplication factors can be improved upon with experimental research, but that is beyond the scope of this paper.

478 As identified by Polymenakos n.d.

To summarize: in order to compare the labour investment of the different tombs we use three criteria: the *size* of the tomb, the *quality of construction*, and the *stone value*, itself a composite variable based on the volume of the stone and the effort necessary to obtain and transport the stones. Each criterion is expressed in different measures. We have made the conscious decision not to combine the three variables into one total score. Keeping them apart avoids the problems arising when combining qualitative and quantitative dimensions and allows for a more nuanced analysis and a better interpretation of the construction process.

8.4 The analysis: homogeneity and variation in the North Cemetery

Based on the types of stone used, the construction method and size of the tomb the following types of tombs can be distinguished in the North Cemetery: regular cists, elab-

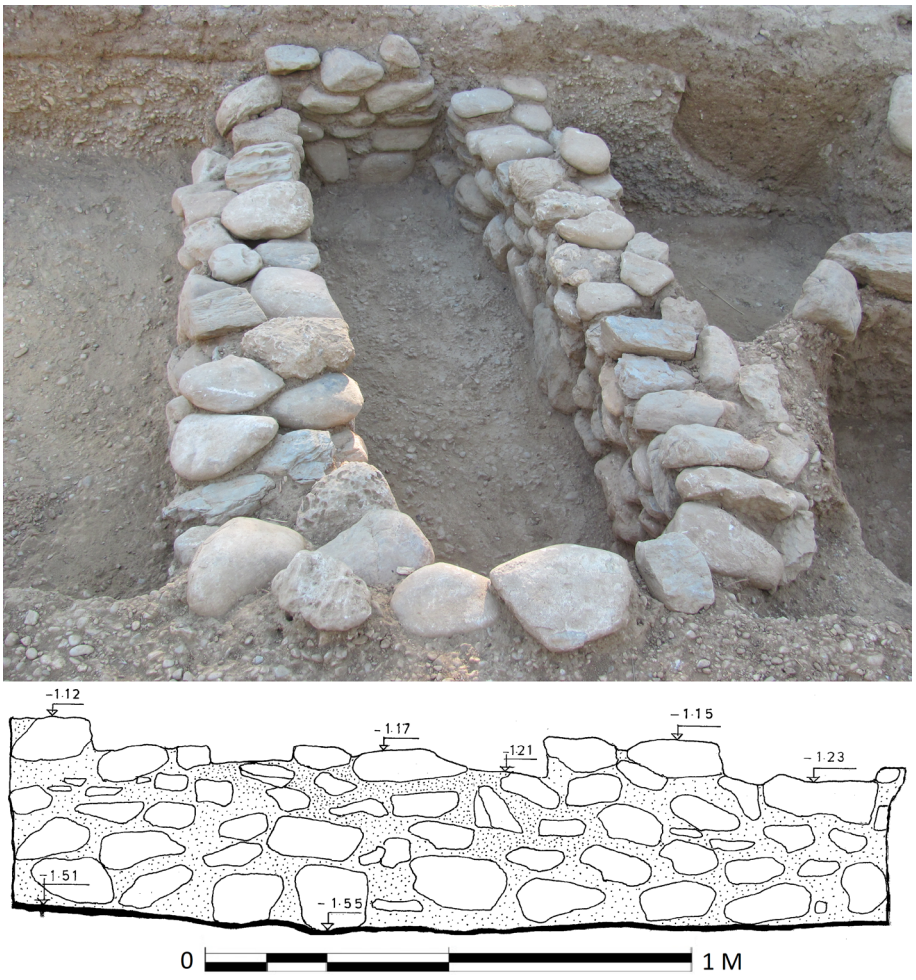

Figure 8.4: An example of a regular cist tomb: General view of tomb 1 (Photo: Vasilis Georgiadis) and drawing of its northern wall (Drawing: Irene Koulogeorgiou).

orate cists, and a built tomb. The regular cists (which are the majority) were mainly built from small- and medium-sized river stones (Figure 8.4). A few cist tombs, which we call 'elaborate cists', were built in a more careful and labour-intensive way: they had neatly fitting schist orthostates in their short sides and small schist slabs, neatly trimmed to fit the width of the tomb wall, as their uppermost course (Figure 8.5).

One tomb (21) differs from all others not only in terms of its size and construction, but also its use. It is substantially larger and deeper than cist tombs. Three of its walls were built like those of some regular cists, *i.e.* the lower course(s) consist of large boulders and the upper courses of small- and medium-sized river stones.[479] The southern short wall was built of small and medium-sized river stones and resembles the more hastily built walls which always block the entrance of chamber and *tholos* tombs (Figure 8.6). It is likely that this side formed a pseudo- rather than a real entrance, as we have evidence that at least some of the burials were placed in the tomb from above. The tomb was not covered by phyllite slabs, but by a mass of small and medium-sized

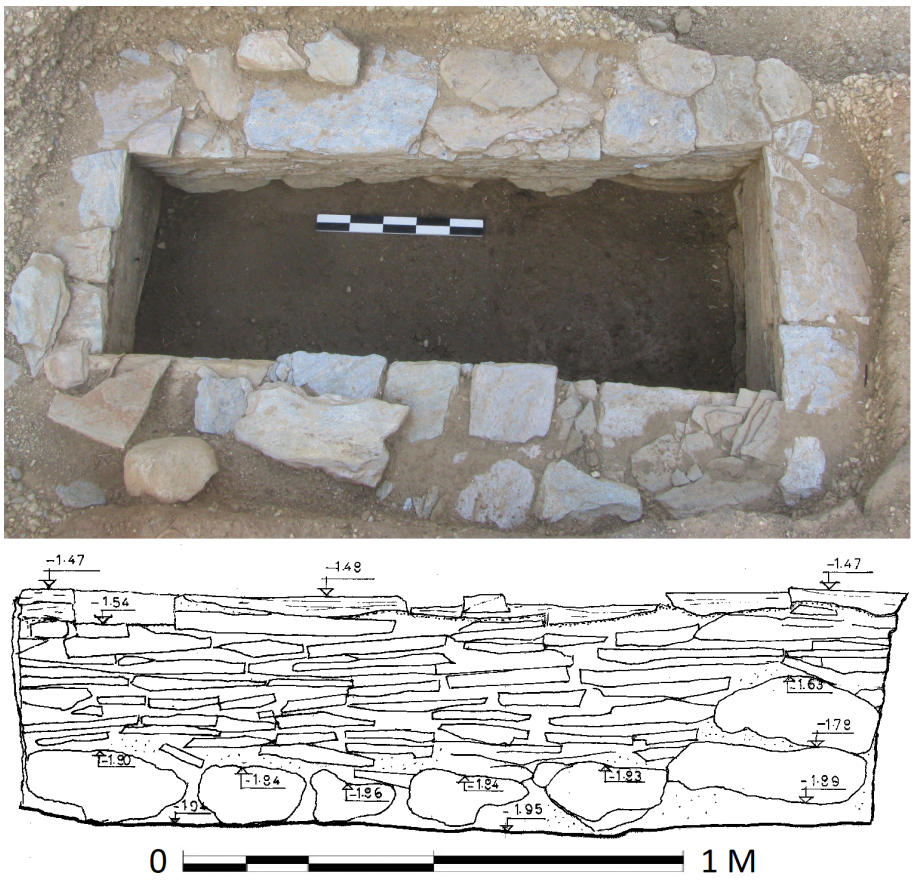

Figure 8.5: An example of an elaborate cist tomb: Aerial view of tomb 14 (Photo: Vasilis Georgiadis) and drawing of its western wall (Drawing: Irene Koulogeorgiou).

479 Referred to as the 'progressive technique'; Papadimitriou 2001, 344.

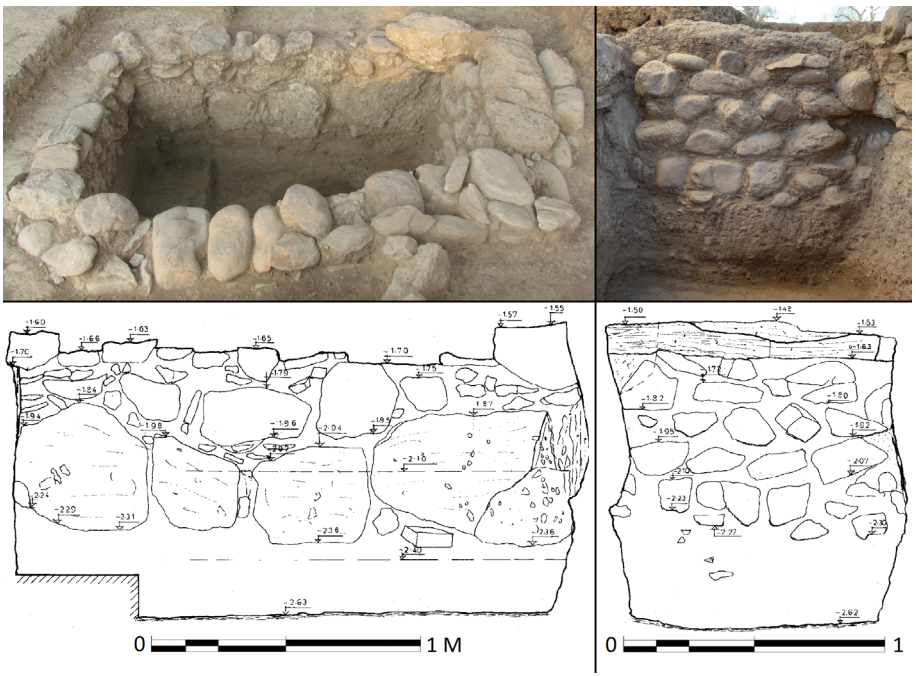

Figure 8.6: The built tomb 21. General view (upper left) and photo of southern wall (Photos: Vasilis Georgiadis). Drawings of eastern wall (lower left) and southern wall (lower right; Drawing: Irene Koulogeorgiou).

stones and slabs which were found inside the tomb in its uppermost layers. This tomb is, therefore, a so-called *built tomb*,[480] a hybrid category, introduced in the transition to the Mycenaean period, which forms the link between the cist tombs, entered from above, and the chamber / *tholos* tombs, entered from their side. The tomb was used for more than 26 burials which were found in successive layers. Therefore, it differs also in this respect from the other tombs (which usually contained one to four burials), and resembles the chamber and *tholos* tombs (which were used for multiple burials).

Let us now examine more systematically the variation along the three variables that we use in our analysis.

8.4.1 Size

In terms of size, the cist tombs show overall uniformity (Table 8.2); most tombs range between 1.30 m^3 [481] and 1.56 m^3;[482] we, therefore, see a clear increase in size from the previous period, the Middle Bronze Age. Only two tombs are significantly smaller.[483] The built tomb 21 is up to five times as large as the other tombs, reaching a volume of 7.67 m^3.

480 Papadimitriou 2001.
481 Grave 14.
482 Grave 20.
483 Grave 1: 1.06 m^3; grave 19: 0.76 m^3.

Internal dimensions				
Tomb	**Length (m)**	**Width (m)**	**Depth (m)**	**Volume (m³)**
1	1.76	0.55	0.48	0.46
4	1.92	0.59	0.49	0.55
8	1.79	0.70	0.58	0.72
14	1.79	0.62	0.49	0.54
18	1.70	0.66	0.51	0.57
19	1.70	0.43	0.36	0.26
20	1.76	0.60	0.58	0.61
21	2.15	1.21	1.10	2.86
23	1.56	0.66	0.58	0.60
External dimensions				
Tomb	**Length (m)**	**Width (m)**	**Depth (m)**	**Volume (m³)**
1	2.05	1.08	0.48	1.06
4	2.36	1.30	0.49	1.49
8	2.15	1.20	0.58	1.50
14	2.14	1.24	0.49	1.30
18	2.12	1.30	0.51	1.41
19	2.10	1	0.36	0.76
20	2.15	1.25	0.58	1.56
21	3.10	2.25	1.10	7.67
23	2.02	1.24	0.58	1.45

Table 8.2: Tomb dimensions.

8.4.2 Quality of construction

Larger built cists appear at the transition to the Mycenaean period. The quality of construction among the North Cemetery cist tombs shows similar uniformity (Table 8.3). The stone coverage of the tombs ranges between 61.71%[484] and 75.20%.[485] There are two exceptions: the built tomb 21 has the lowest value (55.37% stone coverage). Indeed, the tomb is not very carefully built, though the very low value is largely due to the grave floor having been dug deeper than the grave walls, probably in order to accommodate the large number of interments. Tomb 14, the most elaborate cist, shows the highest quality of construction: the entire tomb is built of neatly cut schist slabs which are horizontally stacked and tightly fitted together, leaving few gaps, and forming a more or less vertical face (89.16% stone coverage). In addition, the schist slabs in the uppermost course had a striking light blue colour (Figure 8.5).

It is interesting to note that our category of elaborate cists (see definition above) shows a certain range in quality of construction. While elaborate cist 23 has the highest percentage of stone coverage (75.20%) after grave 14, elaborate cist tomb 8 has a percentage of 65.86%, which is lower than that of some regular cists. While there

484 Grave 19, a regular cist.
485 Grave 23, an elaborate cist.

Tomb	Tomb type	Size (m^3)	Quality of construction	Stone value	Minimum Number of Individuals
1	Cist	1.06	68.98%	35.80	3 (1 secondary)
4	Cist	1.49	68.88%	54.06	4 (all commingled)
8	Elaborate cist	1.50	65.86%	49.88	1
14	Elaborate cist	1.30	89.16%	69.40	7 (4 secondary)
18	Cist	1.40	63.00%	47.16	5 (3 secondary)
19	Cist	0.76	61.71%	30.80	1
20	Cist	1.59	72.42%	55.27	1 or 2 (second = secondary)
21	Built tomb	7.67	55.37%	154.03	26+ (at least 6 primary)
23	Elaborate cist	1.45	75.20%	58.05	4? (3 secondary)

Table 8.3: Overview of results.

are, therefore, differences between regular and elaborate cists, they form a continuum rather than distinct and rigid categories.

Similarly intriguing is that all elaborate tombs have neatly worked slabs as their uppermost course – *i.e.* the most visible part of the tomb at the moment the cover slabs were removed, and thereby the boundary between the dead and the living. It cannot be a coincidence that this period witnesses the introduction of formal cemeteries *at a distance from* the settlement which replace the old intramural burials. Therefore, the mode of construction tells us not only about social strategies of differentiation or conformity, but also about cultural concerns about the boundary between life and death.

8.4.3 'Stone value'

The composite 'stone value' once more confirms the picture of general homogeneity (Table 8.3) and limited but significant variation. The majority of tombs are comparable, with a stone value ranging between 47.16[486] and 58.05.[487] Interestingly, the small and shallow tombs 1 and 19 score relatively low (35.8 and 30.8, respectively) because they are almost exclusively built with river stones. Conversely, two tombs are distinguished by a high score: as we would expect, elaborate cist 14, the one built almost exclusively of schist slabs, has a relatively high stone value (69.4) despite its relatively small size. The situation for built tomb 21 is exactly the opposite: while it was primarily built of river stones and locally obtained marly limestone, its great size, and hence large volume of stone, results in a stone value of 154.03, which is up to five times as high as that of the lowest scoring tomb 19 (30.8).

It is worth dwelling for a moment on the use of phyllite cover slabs (Figure 8.7). Interestingly, the volume and stone values attributed to the use of phyllite, a stone type transported from afar, consistently make up a substantial percentage of the total volume of the tombs (31.8% on average) and stone value (50.4% on average, excluding built tomb 21). This investment is striking because phyllite was used only for the construction of cover slabs, which had to be removed and placed back with every new

486 Grave 18, regular cist.
487 Grave 23, elaborate cist.

Figure 8.7: Cover slabs made of phyllite (tomb 4) (Photo Vasilis Georgiadis).

internment, since the majority of the tombs contained multiple burials. The fact that the only mobile part of the tomb is also the most labour-intensive shows that considerations of efficiency and effort minimization are unimportant in the construction of early Mycenaean tombs. It is obvious that cultural considerations dictated that the tombs should be closed off with these particularly heavy slabs, some of which require up to four men to be lifted and transported. This conclusion is strengthened by the fact that small stones were used to seal the interstices between the slabs (Figure 8.7). This observation strengthens our remarks about the growing emphasis on the boundary between the dead and the living.[488]

To summarize: our analysis of tomb size, quality of construction and stone value has shown an overall uniformity in the North Cemetery tombs. In this respect, the North Cemetery continues the Middle Bronze tradition of relative uniformity, at least among adults.[489]

At the same time, the analysis has also shown limited, but consistent variation. Differences between regular and elaborate cists exist, but remain subtle. Only two tombs, elaborate cist 14 and built tomb 21, differentiate themselves more clearly from the others, but do so in different ways.[490] Tomb 14 differs because of the almost exclusive use of schist slabs, whilst tomb 21 stands out because of its large size and different construction. We can, therefore, conclude that differentiation in the North Cemetery is achieved by means of two different strategies: an increase in size or an increase in quality of construction. The two tombs differ in many respects, but also share some characteristics. As we see in Table 8.4, neither of them are rich; in fact, 14 was found empty. Most importantly, both contain multiple burials: built tomb 21 contains an

488 On this point, see Voutsaki 1998.

489 We mentioned above that neonates, infants, and small children are heavily underrepresented in the cemetery, and when found, are usually buried in small pits.

490 A parallel can also be attested in Mitrou in the contrast between the large cist 51 and the built chamber tomb 73; Van de Moortel 2016, 101-102.

	Offerings	Number of burials	Primary burials	Secondary burials
Tomb 14	-	7	3	4
Tomb 21	1 bronze tweezers 3 clay cups	26+	6	21

Table 8.4: Offerings and number of interments in graves 14 and 21.

exceptional number of burials, but so does tomb 14 if one considers its relatively small size. We mentioned already that the adoption of multiple burials, re-use and secondary treatment are characteristics of the new, Mycenaean mortuary practices, and indicate a renewed emphasis on descent and kinship relations.

Both tombs also share the same tendency to adopt innovative practices and to experiment: the built tomb with the pseudo-entrance and the new type of cover, and the elaborate cist with the extensive use of schist, orthostates, and notably the choice of the striking light blue schist for the uppermost course of the tomb walls.

If we combine the measurements of size, quality of construction, and stone value with the number of burials in tombs 14 and 21, we can easily conclude that these tombs cannot have been built immediately after the death of a member of the community. It would have been impossible to quarry and transport the necessary stones in the time before the decay of the body would set in. We therefore propose that the tombs were planned and constructed in advance, possibly by a group of people connected with kin ties. It is logical to suggest that labour was initially arranged in the nexus of reciprocal relations within kin groups. However, the initiation of the building project and the very act of construction of the tombs, including the quarrying at more distant locations and the transportation of heavy stones to one location,[491] must have altered the flow of resources, and of labour in particular. The channelling of labour to one social group or site must have promoted asymmetrical relations between the various kin groups that inhabited the Ayios Vasilios hill by bringing about what has elsewhere been described as the *centralization of reciprocities*.[492]

8.5 Conclusions

Let us conclude and summarize our argument. Our paper started with three questions:

8.5.1 A theoretical question: how to interpret labour investment?

In our paper, we suggested that we should view labour investment as a social practice, and not only as a measure of energy expenditure. We proposed that we should study labour investment in its physical and social context in order to reconstruct social strategies of differentiation or conformity. In the North Cemetery, we have identified two main strategies of elaboration: the increasing size and complexity of the tomb

491 We do not imply that these acts were taking place only in Ayios Vasilios; a few elaborate cists and built tombs have been found in other sites in Laconia, probably signalling competition between different social groups and emerging regional centres in the early Mycenaean period. A comparison of the North Cemetery tombs with contemporary tombs in Laconia is beyond the scope of this paper.

492 A concept introduced by Sahlins 1974 and applied on the early Mycenaean period by Voutsaki 2016, 76.

represented in built tomb 21, and the improved quality of construction, exemplified in tomb 14.

Our method also allowed us to distinguish which parts of the tomb received special attention. The emphasis on the boundaries of the tombs – the uppermost course and the cover slabs – reveals interesting concerns about the relation between the dead and the living.

8.5.2 A methodological question: how to measure and compare labour investment?

The methodology we proposed aimed at a relative assessment of labour input in tombs rather than absolute measurements in labour-time units, such as man-hours or man-days. Our method takes into account different stages of the tomb construction (digging and removing the soil, obtaining, transporting and working the building material) as well as different axes of variation (size, quality of construction), but also pays attention to tomb design and forms of elaboration. We have used both qualitative and quantitative measures in order to do justice to the complexity of labour assessment and labour mobilization. The variables we used are flexible and can be adapted and used in other cases and situations.

8.5.3 A historical question: how to explain labour mobilization in processes of social change?

We have argued that the appearance of larger and more complex tombs marked the initiation of more ambitious building projects, which brought subtle, but significant changes in the circulation of resources, and of labour in particular. We suggested that at the absence of institutionalized power asymmetries labour was first mobilized within the kin group. However, the very act of tomb construction with resources brought from afar to one specific location subtly distorted the flow of resources. We therefore proposed that the mobilization, manipulation, and centralization of labour are part and parcel of the transformation of kin-based and relatively undifferentiated societies to asymmetrical and centralized social formations.

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CONSTRUCTING MONUMENTS, PERCEIVING MONUMENTALITY & THE ECONOMICS OF BUILDING

In many societies monuments are associated with dynamic socio-economic and political processes that these societies underwent and/or instrumentalised. Due to the often large human and other resources input involved in their construction and maintenance, such constructions form an useful research target in order to investigate both their associated societies as well as the underlying processes that generated differential construction levels. Monumental constructions may physically remain the same for some time but certainly not forever. The actual meaning, too, that people associate with these may change regularly due to changing contexts in which people perceived, assessed, and interacted with such constructions.

These changes of meaning may occur diachronically, geographically but also socially. Realising that such shifts may occur forces us to rethink the meaning and the roles that past technologies may play in constructing, consuming and perceiving something monumental. In fact, it is through investigating the processes, the practices of building and crafting, and selecting the specific locales in which these activities took place, that we can argue convincingly that meaning may already become formulated while the form itself is still being created. As such, meaning-making and -giving may also influence the shaping of the monument in each of its facets: spatially, materially, technologically, socially and diachronically.

The volume varies widely in regional and chronological focus and forms a useful manual to studying both the acts of building and the constructions themselves across cultural contexts. A range of theoretical and practical methods are discussed, and papers illustrate that these are applicable to both small or large architectural expressions, making it useful for scholars investigating urban, architectural, landscape and human resources in archaeological and historical contexts. The ultimate goal of this book is to place architectural studies, in which people's interactions with each other and material resources are key, at the crossing of both landscape studies and material culture studies, where it belongs.

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